CLAIMS

1. A treatment method comprising

providing a balloon mounted on a catheter at a site for treatment within a vascular system; and

pressurizing the balloon to effect a treatment,

wherein

the balloon is pressurized to an inflation pressure which produces a hoop stress on the balloon wall of about 35,000 psi or more.

2. A treatment method as in claim 1 wherein the inflation pressure produces a hoop stress on the balloon wall of from about 35,000 psi to about 65,000 psi.

3. A treatment method as in claim 1 wherein the balloon is formed of a material comprising a PEN polymer selected from ethylene naphthalate homopolymer and copolymers.

4. A treatment method as in claim 3 wherein the PEN polymer material is

a) a polyethylene naphthalate homopolymer or

b) a crystallizable copolyester comprising residues of

i) ethylene glycol,

ii) naphthalene dicarboxylic acid, and

iii) at least one PA residue, said PA residue being a member of the group consisting of residues of terephthalic acid and isophthalic acid, the naphthalene dicarboxylic acid residues comprising about 5% or more of the sum of naphthalene dicarboxylic acid residues and PA residues in the copolyester, and,

the balloon characterized by an ability to withstand a hoop stress of at least 50,000 psi without bursting.

5. A method as in claim 4 wherein the PEN polymer material is a polyethylene naphthalate homopolymer.

6. A method as in claim 4 wherein the balloon has at least two structural layers, one being said PEN polymer layer and one being a layer of a second thermoplastic polymer material.

7. A method as in claim 4 wherein the balloon has inner and outer sides and the second thermoplastic polymer material is a coextruded layer on the outer side thereof.

8. A method as in claim 4 wherein the balloon an ability to withstand a hoop stress of within the range of 55,000 to 65,000 psi without bursting.

9. A method as in claim 1 wherein the balloon is formed of a single structural polymer layer.

10. A method as in claim 1 wherein the balloon has a radial expansion of about 3% or less when inflation pressure is increased from 4 atm to burst.

11. A method as in claim 1 wherein the balloon comprises a structural layer of a crystallizable copolyester comprising residues of

i) ethylene glycol,

ii) naphthalene dicarboxylic acid and

iii) at least one PA residue, said PA residue being a member of the group consisting of residues of terephthalic acid and isophthalic acid, the naphthalene dicarboxylic acid residues constituting 5-20% of the sum of naphthalene dicarboxylic acid residues and PA residues.

12. A method as in claim 11 wherein said PA residues are terephthalic acid residues.

13. A method as in claim 11 wherein the balloon has a single structural polymer layer.

14. A method as in claim 11 wherein the balloon further comprises a non-structural layer of a lubricious polymer.

15. A method as in claim 11 wherein the balloon further comprises a layer of a second polymer, said second polymer being a polybutylene naphthalate homopolymer or a butylene naphthalate copolymer.

16. A method as in claim 1 wherein the balloon comprises at least two structural layers, one layer being a PEN polymer layer, the PEN polymer material being

a) a polyethylene naphthalate homopolymer or

b) a crystallizable copolyester comprising residues of

i) ethylene glycol,

ii) naphthalene dicarboxylic acid and

iii) at least one PA residue, said PA residue being a member of the group consisting of residues of terephthalic acid and isophthalic acid, the naphthalene dicarboxylic acid residues at least 80% of the sum of naphthalene dicarboxylic acid residues and PA residues in the copolyester, and

one layer being a polybutylene naphthalate homopolymer or a butylene naphthalate copolymer.